

REMARKS

Claims 1, 4-6 and 19-21 are rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse the rejection. The Office Action states that the specification does not mention crystal grains contacting each other at a grain boundary to form a continuous seed crystal layer. This assertion is incorrect.

The Office Action states on page 11, lines 1-5, in “Response to Arguments”:

Figures 2 and 11 also fail to show this claimed limitation. Although Figures 2 and 11 illustrates grain areas (29) as perfectly shaped rectangles due to perfectly straight grain boundaries (31), the figures and/or specification do not teach or suggest that the grains grow in perfect rectangular form around the nucleation site (27). The Figures merely illustrate the approximate area within which the grains partially occupy.

The actual crystal grains may not have a vertical cross-section in the form of a “perfect rectangle”. However, Figures 2 and 11 correctly reflect the adjacent crystal grains contacting each other at the grain boundary. This is evident from the comparison between Figures 2 and 11 of the subject application and figure 2 of United States Patent No. 5,846,648 to Chen et al. (hereinafter “Chen”). Chen illustrates in Figure 2 individual grains 76, 78 standing independently. As described on column 15, lines 53-57, insulating material 80 is disposed between the adjacent grains 78 for isolation. The insulating material 80 serves to establish the independency of the individual grains 78. On the other hand, an embodiment of the invention employs diffusion of non-magnetic Cr atoms along the grain boundary for

magnetic isolation between the adjacent crystal grains. If the adjacent grains are spatially isolated from each other as taught in Chen, diffusion of non-magnetic Cr atoms along the grain boundary is not needed for magnetic isolation between the adjacent crystal grains. Accordingly, an embodiment of the invention employs diffusion of non-magnetic Cr atoms along the grain boundary for magnetic isolation between the adjacent crystal grains, because the adjacent crystal grains contact each other in the embodiment of the invention. Hence, claims 1, 4-6 and 19-21 contain the subject matter which was described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Accordingly, withdrawal of the §112, first paragraph, rejection is respectfully requested.

Claims 1, 4-6 and 19-21 are rejected under 35 USC §112, first paragraph, as failing to comply with the enablement requirement. Applicants respectfully traverse the rejection.

The Office Action states that the grain does not contain the nucleation site, rather, the grain grows vertically on top of the nucleation site, when a grain grows on a spatially spaced nucleation site, according to the teaching of Chen. The assertion is incorrect.

The Office Action states on page 11, lines 10-14, in “Response to Arguments”:

...according to the teaching of USPN 5,846,648 to Chen et al., when a grain grows on a spatially spaced nucleation site, the grain does not contain the nucleation site, rather, the grain grows vertically on top of the nucleation site and the size of and spacing of the nucleation site dictates the size and spacing of the corresponding grain...

Chen discloses a seed layer 22 consisting of randomly oriented discrete grains 74, (see column 16, lines 44-45). As is apparent from Figure 2, the seed layer 22 is a continuous layer. Accordingly, upper grains 76 cannot grow outwardly in every direction. Chen also expects establishment of “epitaxial growth” for grains 78 (column 9, lines 34-40). Epitaxial growth allows the individual grains to grow on the tops of the corresponding grains, respectively. The metallic islands provide “trigger” for growth of crystal grains. The metallic islands serve as “seeds” for the crystal grains. The shape and size of the metallic islands cannot determine the shape and size of the individual crystal grains. Chen completely fails to teach or even suggest a feature corresponding to “metallic islands” of the invention. The Applicant herewith provides a reference to United States Patent 7,008,705 for better understanding of metallic islands. Withdrawal of the §112, first paragraph, rejection is respectfully requested.

Claims 1, 4-6 and 19-21 stand rejected under 35 USC §103(a) as being unpatentable over USPN 5,846,648 to Chen in view of USPN 6,602,621 to Matsunuma. Claims 1 and 19-21 also stand rejected under 35 USC §103(a) as being unpatentable over USPN 5,846,648 to Chen in view of USPN 6,620,533 to Hikosaka. Claims 1, 4, 19 and 21 further stand rejected under 35 USC §103(a) as being unpatentable over USPN 5,846,648 to Chen in view of USPN 5,631,094 to Ranjan. Applicant respectfully traverses these rejections for the following reasons:

As an example, independent claim 1 recites (among other things) a feature of “a seed crystal layer containing crystal grains and covering over the surface of the substrate

and said metallic islands". As will be explained below, at least this feature of claim 1 is a distinction over Chen, and thus over its combination with Matsunuma.

Chen discloses a seed layer 22 consisting of randomly oriented discrete grains 74, column 16, lines 44-45. As is apparent from Figure 2, the seed layer 22 is a continuous layer. Grains 76 grow on the tops of the discrete grains 74. Chen completely fails to teach or even suggest a seed crystal layer containing crystal grains and covering over the surface of the substrate and the metallic islands. Hence, the noted features of claim 1, namely "a seed crystal layer containing crystal grains and covering over the surface of the substrate and said metallic islands", is a distinction over Chen. The noted features also is a distinction over Matsunuma, Hikosaka and Ranjan, as evidenced, e.g., by the Office Action. That is, the Office Action does not assert Matsunuma, Hikosaka or Ranjan as disclosing the noted features.

Among other things, a *prima facie* case of obviousness must establish that the asserted combination of references teaches or suggests each and every element of the claimed invention. In view of the distinction of claim 1 noted above, at least one claimed element is not present in the asserted combination of references. Hence, the Office Action fails to establish a *prima facie* case of obviousness vis-à-vis claim 1. Claims 4-6 and 19-21 ultimately depend from claim 1, respectively, and so at least similarly distinguish over the asserted combination of references.

In view of the foregoing discussion, the rejection of claims 1, 4-6 and 19-21 is improper. Accordingly, withdrawal of the §103(a) rejections is respectfully requested.

For all of the foregoing reasons, Applicant submits that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

If a Petition under 37 C.F.R. §1.136(a) for an extension of time for response is required to make the attached response timely, it is hereby petitioned under 37 C.F.R. §1.136(a) for an extension of time for response in the above-identified application for the period required to make the attached response timely. The Commissioner is hereby authorized to charge any additional fees which may be required to this Application under 37 C.F.R. §§1.16-1.17, or credit any overpayment, to Deposit Account No. 07-2069.

Respectfully submitted,

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